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(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

(Continued)

FOREIGN PATENT DOCUMENTS

CN	101828072	A	*	9/2010	.....	F21S 10/02
CN	101842907	A	*	9/2010	.....	F21V 9/10

(Continued)

## OTHER PUBLICATIONS

Chinese Office Action issued in Application No. 201280046062.5 dated Jul. 3, 2015.

(Continued)

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(57) **ABSTRACT**

A lighting device may be provided that includes: a light emitting device; and an optical exciter which is disposed over the light emitting device and emits light excited by the light emitted from the light emitting device, wherein the optical exciter includes at least one of a yellow fluorescent material, a green fluorescent material and a red fluorescent material, wherein the optical exciter moves over the light emitting device, and wherein a color temperature of the light emitted from the optical exciter varies according to the movement of the optical exciter.

**18 Claims, 12 Drawing Sheets**

